

REMARKS

Claim 35 is amended. Claim 75 is added. Claims 35-48 and 75 are pending in the application.

Claims 35-48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Besser, U.S. Patent No. 5,582,881; Marieb, U.S. Patent No. 5,909,635; Colgan, U.S. Patent No. 5,925,933; and Shan, U.S. Patent No. 6,140,228. The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Claims 35-48 are allowable over Besser, Shan, Colgan, and Marieb for at least the reason that the references, individually or as combined, fail to disclose or suggest each and every limitation in any of those claims.

As amended, independent claim 35 recites depositing a first layer comprising elemental aluminum or aluminum alloy, an outermost portion of the first layer being deposited at a first deposition temperature of at least 400°C and in a second chamber depositing elemental titanium or a titanium alloy on the first layer, the outermost portion of the first layer sustaining a temperature of at least 360°C between the depositing the first layer and the depositing the at least one of elemental titanium or a titanium alloy on the first layer. The amendment to claim 35 is for clarification purposes and is not intended to limit the scope of the claims. The amendment to claim 35 is supported by the specification at, for example, page 8, line 20 through page 9, line 1. Besser discloses formation of an aluminum or an aluminum alloy layer on a substrate, and subsequently moving the

substrate into a different chamber, pre-heating the substrate to approximately 350° C and subsequently depositing Ti onto the aluminum (col. 3, ll. 14 through col. 4, ll. 2). As acknowledged by the Examiner at page 4 of the present action, Besser does not disclose or suggest the claim 35 recited forming an outermost portion of the aluminum layer at a temperature of at least 400°C or the recited preventing the outermost portion from cooling below 360°C during deposition of a first titanium layer. Further, Besser does not disclose or suggest the claim 35 recited outermost portion of the first layer sustaining a temperature of at least 360°C between the depositing of the first layer and the depositing elemental titanium or titanium alloy on the first layer.

Marieb discloses depositing an aluminum-copper alloy layer 110, depositing a layer of titanium 120 on the aluminum alloy, depositing a layer of titanium nitride, and forming a conductive structure comprising the aluminum alloy titanium and titanium nitride layers (col. 3, ll. 3-22). Marieb further discloses formation of a titanium layer 140 over the conductive structure and applying heat in the range of 350°C to 450°C (col. 3, ll. 23-31). Marieb does not disclose or suggest the claim 35 recited deposition temperatures or the claim 35 recited outermost portion of the first layer being sustained at a temperature of at least 360°C between depositing the first layer and depositing the titanium or titanium alloy. As combined, the depositing of aluminum and preheating prior to depositing titanium as disclosed by Besser, and the formation of a conductive structure followed by depositing of titanium and application of heat as disclosed in Marieb do not suggest the claim 35 recited depositing an aluminum comprising layer, at least an outermost portion of the aluminum comprising layer being deposited at a temperature of at least 400°C and sustaining the outermost portion of the aluminum comprising layer at a temperature of at least 360°C

between depositing the first layer and subsequent deposition of at least one of elemental titanium and titanium alloy on the first layer.

As indicated by the Examiner at page 4 of the present action, Shan is relied upon as disclosing aluminum deposition temperature of 400°C to 500°C. As indicated at page 6 of the present action, Colgan is relied upon as showing an interconnect for a semiconductor device comprising aluminum alloy, titanium and titanium nitride. Neither Shan nor Colgan discloses or suggests the claim 35 recited outermost portion of an aluminum comprising layer being sustained at a temperature of at least 360°C between depositing of the aluminum comprising layer and subsequent deposition of at least one of elemental titanium and titanium alloy. As combined with Besser and Marieb, neither of Colgan and Shan contribute toward suggesting the claim 35 recited depositing an aluminum comprising layer, at least an outermost portion of the aluminum comprising layer being deposited at a temperature of at least 400°C, the outermost portion of the aluminum comprising layer sustaining a temperature of at least 360°C between depositing the aluminum comprising layer and subsequently depositing at least one of elemental titanium and a titanium alloy on the aluminum comprising layer. Accordingly, independent claim 35 is not rendered obvious by the cited combination of Besser, Marieb, Colgan and Shan and is allowable over these references.

Dependent claims 36-48 are allowable over the cited combination of Besser, Marieb, Colgan and Shan for at least the reason that they depend from allowable base claim 35.

New claim 75 does not add "new matter" to the application since the claim is fully supported by the specification as originally filed. Claim 75 is supported by the specification at, for example, page 5, lines 21-22; page 6, line 20 through page 7, line 2;

and Figs. 2 and 3.

For the reasons discussed above, claims 35-48 are allowable and claim 75 is believed allowable. Accordingly, applicant respectfully requests formal allowance of pending claims 35-48 and 75 in the Examiner's next action.

Respectfully submitted,

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